1875 -3-22

Introductory Lecture

to Tenth Course

of

Auxiliary Faculty of Medicine

University of Pennsylvania

3/22/75.

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With our first words of greeting to you, gentlemen, must come ~~the~~ our expression of congratulation, on behalf of the Auxiliary Faculty of Medicine, ~~or~~ upon the now ~~[illegible]~~ to you ~~[illegible]~~ ~~though~~ ~~grateful~~ familiar topic, of the transfer of ~~our~~ our ~~[illegible]~~ ~~that of the other~~ ~~[illegible]~~ teachers ~~[illegible]~~ work of the University, to these noble halls.

To-day begins the 10th session of the lectures of the Faculty, which it is my honorable ~~[illegible]~~ and agreeable duty to represent in this hour before you. Short as ~~our~~ has been decade of existence in comparison with the more than a hundred years' age of the University itself, it is not unintereas-

-ting to remember, that the centennial year, 1876, will be just ~~sixty~~ sixty years ~~from~~ the first appointment, by the Trustees of this University, in 1816, of a Faculty of Natural Science; in which, by four Professors, all of them medical men, were taught Botany, Comparative Anatomy and Natural History, Mineralogy and Chemistry. This so constituted faculty does not appear to have continued its instructions for many seasons. Why there should have been in our time a [redacted], more successful persistence in a plan [redacted] of teaching somewhat similar, is a question of interest for us. It was not at all because of any deficiency

of ability or acquirement on the part of those appointed in that early Faculty of Natural Science. They were men, at that time and subsequently, of distinction in their profession, as well as in general science. But, besides the foundation established for our present Faculty through the large liberality of one, whose services, already personally rendered, with remarkable usefulness, to one generation, have thus been made perpetual, it is, we may believe, also an important truth, that the times are more ready now than half a century ago for such an extension of the resources of medical students, in any American medical College or University. Ours, we may hope, is a transitional era

in the medical instruction of this country. Long has it been lamented by many earnest and loyal members of the profession, that, with as much talent and adaptation to their work as are anywhere to be found in the world, the training of physicians in America has been in its requirements, in the past, less complete than that of those educated abroad. It may, perhaps, do no harm once more to recall this comparison.

In Great Britain, every student requires, in order to the beginning of his studies in a Medical School, either the academical degree of a University, or a testimonial of preparation obtained by examination in some designated institution of appropriate preliminary

instruction. Four years of study are then exacted; including at least three winter and two summer terms of lectures, and one winter and two summer terms in attending a hospital, or in some other equivalent kind of application under special professional teaching.

In France, every student must have, to begin with, his degree of Bachelor of Science; to obtain which he must have been examined, amongst other subjects, upon physics, chemistry, botany and zoology; or else he must have the medical diploma of a foreign institution. He may then complete his studies in four years, although a considerably longer time is often devoted to preparatory hospital training.

In Germany, graduation in a gymnasium which is really a collegiate institution, is necessary, before entering

upon the study of Medicine; after which, either four or five years are required for preparation for the doctor-ate. During that time, at the end of this second year, there comes a severe examination upon chemistry, botany or mineralogy, zoology, and comparative as well as human anatomy and physiology.

I bring these matters before your attention at the present time, to show two things. One, that, in the instruction given in our summer courses upon the naturalistic branches, Botany, Mineralogy and Geology, Zoology and Comparative Anatomy, this University, although liberal, is not peculiar; it has abundant and excellent European precedents. The other thing is, that our Medical Schools in this country are in some respects, yet, far behind the standard set before us

in the great institutions abroad.

Five years ago, in an address on an occasion like the present, at the opening of our Summer Course of 1870, I ventured to express a concurrence with the demand increasing throughout the profession, for a voluntary extension of the time of medical preparation, by agreement between the students and the Colleges; and, also, a strong conviction of the important facilitation of thoroughness obtainable by the progressive plan of study; with three years, at least, of lectures, and successive examinations.

As one who has been engaged in giving instruction, private or public, to medical students, throughout almost the whole time since my own graduation, it is not too

strong an expression for me to say that I rejoice at the adoption, latterly, of this plan of progressive study, in several of the great medical leading schools, including the University. And especially do I regard this plan as of value, in affording increased room and opportunity for every student to avail himself of the advantages of University instruction. Here also there is a natural and convenient, although of course not necessary or inevitable, order of progress and succession. Should I have to lay out for a medical student a course of study to which he could devote only three full years (and, mark, I say only three, because I am sure it had much better

be four or five years, it would be, in addition to and in connection with, the progressive course as now announced in the programme of the Winter Lectures, about as follows, for the summer terms:

In the Spring which begins the first year of his ~~[illegible]~~ study, let the student ~~[illegible]~~ attend, of our Auxiliary Faculty Course, at least the lectures ~~in~~ the three naturalistic departments; Botany, Mineralogy and Geology, and Zoology and Comparative Anatomy. Of the other lectures of the Summer Course, in his first summer, those on Regional and Morbid Anatomy, and on Practical Microscopy; with the Hospital Clinics, from the beginning to the end; for one cannot have too much Hospital.

In the second and third summers, it will not be more than his then acquired capacity, and, we may hope, interest, will be prepared for, to attend all the lectures of the Auxiliary Faculty, as well as all the other Summer Lectures and Clinics. So much time being thus given to these studies, during periods not occupied with the branches necessary for the medical degree, proficiency in them will become easy and satisfactory; and our degree of Doctor in Philosophy may be well earned also, without undue stress of labor. The importance of time as a factor in all intellectual and professional training is very great; it has hardly yet met with

sufficient general appreciation. It is as indispensable an element in the maturity of available knowledge as it is in the proper digestion of food, to make it assimilable nutriment. There is no possibility of entirely substituting it by any mere strain of assiduity in rapid effort. You may pack men's brains — their memories — as you may cram their stomachs; but good chyme, or perfect chyle, healthy blood, or sound knowledge, beyond mere word-rote, — you cannot get, in such a fashion. Believe me, three courses of lectures, well attended, will be worth, in the end, twice as much to every student as two; as ~~and he knows that in~~ a first course there is apt to be much undigested residuum.

And now, ~~gentlemen~~, do I need to make any special advocacy of the [redacted] or courses of lectures on which we enter to-day, — those of the Auxiliary Faculty of Medicine? They have sometimes been undervalued; almost decried; as — "not practical." That word practical is not very easy to define. Facts are always practical. That they are not all so near as some other studies might be, to the immediate beaten pathway, the routine, of the practice of medicine, surgery and obstetrics, would be a more plausible assertion. But against ~~this~~ also, much may be said and proven. Botany and Mineralogy come very near to Materia Medica and Therapeutics. Comparative Anatomy and Zoology are portions of the great Science of Biology, of which anthropology, the science of man, is the

culminating part: you cannot understand man fully, unless you compare him with the animal kingdom of which he is the head. Facts then, of much importance, closely kindred to those with which every medical student is required to make himself acquainted; as near to his practice, indeed, as are the foramina of the temporal bone, the iter e tertio ad quartum ventriculum of the brain, the rationale of the manufacture of sulphuric acid, and many other things which you and we have had, very rightly, to learn once at least in our lives; — facts, of moment for highly educated professional men, belong to and are conveyed in these noble and beautiful sciences of Botany, Zoology, Comparative Anatomy, Geology and Mineralogy. Natural Affinity exists between these studies and those

of the physician. Else, why does it happen, that most of the great and leading scientists in various departments, naturalists, have begun their careers, at least, as medical men? In connection with this reflection, we may follow, for a few moments, the line of suggestion thrown out by Professor Rogers, in his eloquent valedictory discourse, ~~Professor Rogers~~, at the late commencement. I have selected, with but an hour or two's research, fifty names, of men of high position in science, during the past hundred years, who have studied medicine; and all but one or two, who were actually graduates as physicians or surgeons; a number of them having been considently engaged in practice. You may be surprised, as I have been, to find how many of these have been scientific stars of the very first magnitude; and yet, I am sure, the memories of some now present might add several important names to ~~the list~~ such a list.

Let us take first the

Botanists:

There was
Linnæus; a host indeed in himself;
De Candolle;
Antoine & Bernard de Jussieu —
Robert Brown;
Jos. Dalton Hooker; all these abroad;
Dr. Benj. Smith Barton;
Dr. John Torrey,
Dr. Asa Gray. — American — These are the very first names in Botanical Science!

Then, of the

Zoologists & Compar. Anatomists:

Swammerdam & Ehrenberg;
John Hunter, Edward Jenner;
Erasmus Darwin; — (germ of "Darwinism")
Dr. Carpenter; Richard Owen; Rymer Jones;
Macliè; Huxley; Agassiz:
Dr. Richard Harlan (grad. univ. Pa.; Fauna americana)
Dr. John Godman — Rambles of a Naturalist —
Dr. Sam. Geo. Morton — ethnologist &c
Dr. Jeffries Wyman — (The "Scientific Life" —
Dr. Leidy: — Dr. Leconte — Packard — Salem "Early entomologists.")
American

Ethnologists:

Dr. Pickering, — Dr. Pickering.
Nat. Hist. of Man — Wilkes Explor. Expdn.

Over

Geologists:

Besides some already included, as Agassiz,

Forbes — rival of Agassiz in connection with the glacial theory —

Dr Hayden —

Explorers:

Dr E. K. Kane; Dr I. I. Hayes,

Dr. David Livingstone;

It is not very far from our track to refer to some names, also,

In Chemistry & Physics:

Berthollet, associate and peer of Lavoisier;

Galvani,

Berzelius; Wollaston;

Dr. John Davy (brother of Sir Humphrey);

Helmholtz; (2) ~~[illegible]~~ Liebig; (1)

Prof. W. Allen Miller: these abroad;

Prof. J. W. Draper — American;

and — Prof Rogers — sound of his name — &c —

In Microscopy:

U. S. Ag. of Washington, Dr. Woodward; Tyson, Hunt, Richardson.

High Representative Scientific Honors:

Dr G. B. Wood — Dr W S W Ruschenberger

Am. Philos. Soc. Acad. Nat. Sciences.

I think, then, that I have made out my point, that very many, if not most, of the leading scientific men of Europe and America have been medical men... Let it not be supposed that I desire, by such an enumeration, to allure any from the path of strictly professional study. There is enough therein, to deserve, attract and retain life-long attention. Many of those who have left medicine for other scientific pursuits have been brought to do so by external circumstances; and others have loved, not Medicine the less, but general Science more. But my purpose is, to show the strong existing affinity between General Science and Medicine. Every physician should

be, to use a new but very convenient word, a Scientist. He should be such, for the needs of his professional knowledge; but he should be so also, for the great advantage of his own intellectual culture. The latter is a broad platform on which to assert the appropriateness of general, and most of all naturalistic, studies to a place in an extended medical curriculum. But I prefer to dwell at present more on the former consideration.

No man ought to become a physician, unless he has a scientific mind, the scientific spirit. What is the scientific spirit? It is not,

I make bold to believe, a spirit of enthusiastic faith, or ready confidence in everything new, or plausible, ~~that~~ or is put forth by authority. Nor yet, is it that of perpetual doubt; of habitual, unrelenting scepticism. It is, rather, the spirit of constant, patient, and thoughtful investigation; trying all things, and holding fast that which is good. It is not narrow. It does not depend upon the eye, or on the other senses, or the hand, no matter how well aided by instruments of precision, alone. Thinking; broad, careful brain-work; logical synthesis and analysis, sound induction and deduction;

these are among its prime requisites; without which all merely instrumental machinery can give only the conditions for endless proliferation of degenerate, decaying and obstructive products of pseudo-discovery and inane invention. It is the more easy and safe to say this now, because so eminent an experimental observer as Dr Brown-Séquard has latterly pointed it out, in connection with some very famous inquiries and assertions concerning the functions of the brain. At the meeting of the National Academy of Science last year, Dr. Brown-Séquard gave it as his opinion that the subject of brain-functions "has been rendered more difficult, by assumptions of physiologists upon insufficient data." "A part of

the facts," he adds, "are taken for the whole."
It has sometimes occurred to me that there are experimenters, and perhaps observers, who are somewhat like Göltz's celebrated prepared frog: from which, for some purpose, the bulk of the cerebral hemispheres had been removed, leaving the sensorial ganglia still complete; so that the creature could see, hear, feel, taste, move, do everything but think; but for thinking, it had no capacity at all. Observation, then, without thought, cannot make science; though it may make crude material out of which thought may afterwards make science. Of all the instruments in use for research, the brain is king, after all.

It follows, then, that breadth is necessary for the development of the scientific spirit; and, for breadth, it is important that many studies shall be surveyed, in subordination to the one leading pursuit. I do not, for a moment, advocate the subjection of medicine, that is of pathology and therapeutics, to the methods or facts of other sciences. It has, it must have, its own methods, its own facts and its own jurisdiction. Every science has such. The methods of biology are not the same as those of chemistry or inorganic

physics; and the methods of investigation in clinical therapeutics are not the same as those of biology. On this I wish to be quite outspoken, — because of the general interest of the subject, as well as because it grows out of the topic which we have primarily before us to-day. The logic of science, with all that has been written and done towards it, from the times of Bacon and Newton to those of Stuart Mill, is not commonly understood, and is still less conformed to. Let me adduce some few illustrations, of subjects on which imperfect evi-

according to my judgment at least,
dence has been allowed to
induce ~~[redacted]~~ a large though hasty acceptance
of conclusions of importance. An
English Physician, in an annual ad-
-dress, a few years ago, spoke of the value
of "a good working theory;" meaning
one, which, although not yet established
as true, is convenient to act upon,
as being more or less probable, in the absence
of any ~~that~~ is better, or any ~~that~~ is completely
proved. All very well is this, so long
as it does not have the effect
leading any to be satisfied with a theory as
if it were proved true, while it is
not. When this occurs, there is obstruction,
and ~~that~~ which was at first stated merely as a pro-
-visional hypothesis, becomes built up
into ~~an~~ a almost indelicable dogma.

Physiology:

Tonics —

Vaso-inhibitory action —

Pathology:

resorptive origin of tubercle

Etiology:

extension of typhoid fever — cholera —

local begins & bacterial origin of

diphtheria.

Therapeutics:

treatment of puerperal

fever by the lancet, Epsom salts & calomel

"working theory" — & Still alcohol panacea.

when discouraged, are we to turn

to —

Toxico-therapy?!

Still & Burdon Sanderson —

Last: Med. Jurisprudence & Hygiene. —

In Physiology, I have already alluded, while quoting from Brown-Séquard, to a remarkable series of experimental inquiries, no doubt well known to all of you; those of Fritsch, Hitzig, Ferrier and others upon the motor centres in the brain. It will be enough for my present purpose to say further, merely, that I regard Brown-Séquard's criticism thereupon as altogether just and appropriate.

On another subject in Physiology, perhaps a still looser and hasty acceptance of conclusions without evidence has prevailed: I mean the subject of cardiac and vaso-motor inhibition. If you look over the pages of recent periodicals containing ~~[illegible]~~ contributions to experimental physiology, especially German or English, you will find pages on pages of

the most intricately involved statement and ratiocination, labyrinthine in every sense; and through it all, in most, happily not in quite every instance, assumption is made of the assured certainty of that which, I have no hesitation in averring, has never yet been positively proved in one single instance; namely, true, normal inhibitory action, as a special or exclusive function of any nerve or nerve-centre in the human or animal body.

I must not here detain you by lingering among these examples of illogical science. In Pathology, we find one, at least, near at hand; the acceptance, by not a few, of the theory of the generally resorptive origin of pulmonary tubercle. We may

find them also in etiology;
in the now current dogma of the
exclusively specific and intestino-contagious propagation
of typhoid fever; (to coin a phrase)
in the similarly ~~death in the pot~~
current view of the mode of extension of malignant cholera;
and in that [redacted] most recent, of the primary nature,
and bacterial origin, of the throat
affection in diphtheria. Mark, I do not
say that this account of the pathogeny
of diphtheria may not be true; only,
at present, it is not proven; at
the best, it should be regarded as
[redacted] but a provisional working
theory, under examination.

In therapeutics, 30 years
ago, in the Pennsylvania Hospital,

the "working theory" concerning Puerperal fever was, that it was merely as a violent inflammation, to be treated by means of enormous bleedings from the arm, or else by 20 grain doses of calomel, and ounce doses of Epsom salts. Later in England, the favorite working theory of Dr Todd of London was, that alcohol is the great constant remedy appropriate for all acute Dis-eases, whether inflammatory or not. Both of these were extremes; and both, and all such, come to be corrected in time by the palpable results of experience. If a better logic

of observation and inference prevailed, such experience would be forecast, — "discounted", — and thus rendered unnecessary.

There are some who, with a large estimate of such disappointments as have attended certain tentative courses of procedure in practical therapeutics in the past, are prone to turn away from the slow method of cautious observation in clinical medicine, and to look for a royal road elsewhere. They want experimental therapeutics, as well as experimental physiology, to be based exclusively upon the laboratory foundation. So long as suggestions are to be furnished in such modes to the physician this may be well. It belongs to our present argument for me to say, but I must place myself along side of Professor Stillé of the chair

of Practice in this University, also with and as less a physiologist and physician than Dr. Burdon Sanderson abroad, in maintaining that only suggestions, not dictation, limitation, prohibition or substitution, can rightly come to Clinical Medicine, either from physiology or from comparative Toxicology. Very far indeed from me is any thought of disparaging the latter science;— to which two of my Colleagues have made most valuable contributions. But we do not, I believe, have much ground for hoping, that a successful Practice of Medicine, more successful than that of the past, can be built up from Toxico-therapy.

Render unto Toxicology the things that belong to it, and to Clinical Medicine those things that are its own: its own [redacted] facts, evidences and conclusions. Slowly [redacted] they may but at last come, they are sure; and for certainty in Medicine, there is no other way of progress. Again, therefore, I say, we want the scientific spirit, and scientific culture, amongst physicians, not to introduce the methods of other sciences into their work, but to perfect them in their own methods, for their own proper ends.

But I must not conclude, without making allusion to those two departments in the course of our Auxiliary Faculty, which are not naturalistic, but which are closely connected with the immediate professional needs of the physician: Medical Jurisprudence and Hygiene.

Of the first, I need say nothing here of eulogy, much less of justification or defence. Within the first month or year of a medical graduate's entrance upon practice, he may be summoned to appear as a skilled witness in Court. Such was my experience, before I

had even ended my term of residence in the Hospital. And then, not only the interests, & perhaps the life, of some one, may turn upon the medical witness's judgment or knowledge, but also his own reputation, and the honor of the profession, may be involved. Every medical man ought to have a knowledge of Medical Jurisprudence. I had almost said that it is as necessary to every physician, as is an acquaintance with practical medicine to every surgeon or obstetrician, or as surgical or obstetrical knowledge can be to the medical practitioner. And I believe that this opinion is gaining ground in the profession.

With regard to Hygiene, it is not too much to assert, that it is one of the especially rising sciences of the present age. The public interest taken, as shown by the press of the great cities, in the late meetings of the American Public Health Association, illustrates this. The study of the laws of health, public and private, and of the prevention of disease, is not now confined to the medical profession; intelligent men of all vocations enter into it with zeal and ability. But, to physicians all look for the main guidance and active participation in, the advance of sanitary science, and the movements of sanitary reform. Preventive Medicine,

and State Medicine, are terms
more and more significant of ideas
and purposes of wide importance.
In the discourse of an eminent graduate
of this University at the reunion of its
Alumni, week before last, allusion was made
to the comparatively small influence
so far exercised by the medical
profession in State affairs; and to
the prospect, apparently not remote,
of a time when this may be changed, to the general advan-
tage.

One of the most interesting
European events of the present year
has been the visit of Garibaldi,
for the first time since his retirement,
to Victor Emmanuel, at Rome.

What was the chief subject of discussion, at this memorable interview, between the Statesman, veteran, hero of many battles, and the Soldier King? Not, recally their feats of arms on the field; not to plan new schemes of military ambition, new honors for the patriot leader, or new pageantry of monarchical display. Not these; but, instead, the drainage of the malarious Campagna, and the embankment of the Tiber! — We count as the best and most surely immortal words of

the great and successful soldier now at the head of our government at Washington, those words uttered by him at the close of the civil war: "Let us have peace." Along with these, hereafter to be appreciated and remembered, those of the most chivalrous European patriot of our times: "Let us have health;" and, with health, material prosperity and public happiness.

Tomorrow, gentlemen, we commence the regular work of our summer session. We trust that those who favor us with their company may find here opportunities and

resources of knowledge and of general thought, such as will not be less valued for close acquaintance with them; although it may be that all of their bearings will not be fully realized, until you come to know them as tried weapons or well proved instruments of service, in the conflicts and labors of a busy and extended professional life.